

## Freeform Search

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	<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>		
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<u>L23</u>	L21 and (multilevel or multi-level or multi-tier or multitier) near business near organization	0	<u>L23</u>
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<u>L21</u>	("financial service organization" or "fso")	1897	<u>L21</u>

<u>L20</u>	L18 and process\$	3343	<u>L20</u>
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File: USPT

May 21, 2002

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DOCUMENT-IDENTIFIER: US 6393386 B1

TITLE: Dynamic modeling of complex networks and prediction of impacts of faults therein

DATE-ISSUED: May 21, 2002

## INVENTOR-INFORMATION:

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Visual Networks Technologies, Inc.	Rockville	MD			02

APPL-NO: 09/ 048025 [\[PALM\]](#)

DATE FILED: March 26, 1998

INT-CL: [07] [G06](#) [F](#) [9/455](#)

US-CL-ISSUED: 703/25; 703/27, 709/223, 713/201, 370/254

US-CL-CURRENT: [703/25](#); [370/254](#), [703/27](#), [709/223](#), [713/201](#)

FIELD-OF-SEARCH: 395/500.05, 395/500.34, 395/500.44, 709/224, 709/300, 709/223, 709/227, 709/228, 703/25, 703/27, 370/254, 713/201

PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<a href="#">4985857</a>	January 1991	Banpai et al.	364/551.01
<input type="checkbox"/>	<a href="#">5195095</a>	March 1993	Shah	371/15.1
<input type="checkbox"/>	<a href="#">5295244</a>	March 1994	Dev et al.	395/161
<input type="checkbox"/>	<a href="#">5309448</a>	May 1994	Bouloutas et al.	371/29.1
<input type="checkbox"/>	<a href="#">5317568</a>	May 1994	Bixby et al.	370/85.6
<input type="checkbox"/>	<a href="#">5517622</a>	May 1996	Ivanoff et al.	395/200.13
	<a href="#">5528516</a>	June 1996	Yemini et al.	364/551.01

<input type="checkbox"/>				
<input type="checkbox"/>	<u>5608720</u>	March 1997	Biegel et al.	370/249
<input type="checkbox"/>	<u>5661668</u>	August 1997	Yemini et al.	364/550
<input type="checkbox"/>	<u>5748896</u>	May 1998	Daly et al.	395/200.53
<input type="checkbox"/>	<u>5799153</u>	August 1998	Blau et al.	395/200.53
<input type="checkbox"/>	<u>5854750</u>	December 1998	Phillips et al.	364/478.04
<input type="checkbox"/>	<u>5918051</u>	June 1999	Savitzky et al.	395/683
<input type="checkbox"/>	<u>5951680</u>	September 1999	Redlin et al.	713/1

## OTHER PUBLICATIONS

"HP Open View Network Node Manager", Administrator's Reference, Hewlett Packard, Manual Part No. J2316-900005, 12/93.

A.T. Bouloutas, et al, "Alarm Correlation and Fault Identification in Communication Networks", IEEE Transactions, vol. 42, No. 2/3/4, Feb./Mar./Apr. 1994.

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German Goldszmidt et al., "Evaluating Management Decisions via Delegation", Integrated Network Management, III, 1993.

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J.F. Jordaan et al., "Event Correlation in Heterogeneous Networks Using the OSI Management Framework", Unit for Software Engineering, Department of Computer Science, University of Pretoria, South Africa.

International Communication Union, CCITT The International Telegraph and Telephone Consultative Committee X.832, "Data Communication Networks", 1/92.

ART-UNIT: 2123

PRIMARY-EXAMINER: Teska; Kevin J.

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## ABSTRACT:

A method and system are provided for use in administering a complex system, such as a distributed computing ensemble. A model of the system being administered is prepared, preferably during runtime of the invention, by a combination of autodiscovery processes and manual input of information as needed. The model represents not only the resources found in the administered system, but also the service-relationships among those resources. The system administrator also can define elements in the model corresponding to arbitrary groupings of already-existing parts of the model. Software agents, which can be reconfigured, started and terminated as desired during runtime, report changes in state of the managed resources to the model, which updates itself and explores portions of the model adjacent (in terms of the service relationships) to the affected resource(s). Clusters of neighboring state-changes that have a logical relation to each other are grouped together as an alarm, and are preferably represented in a graphical display. Any root-cause event of this type is marked as such, and any portions of the modeled system being (or logically likely to be) affected by the changes are

also identified and displayed.

17 Claims, 32 Drawing figures

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